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CLINICAL RESEARCH

Loan applications in adult patients with congenital heart disease: A French study

Demande de prêt chez les patients adultes avec une cardiopathie congénitale : étude française

Magalie Ladouceur^{a,*,b}, Bertrand Dugardin^a,
Stéphanie Gourdin^a, Daniel Sidi^b, Damien Bonnet^b,
Laurence Iserin^{a,b}

^a Adult congenital heart disease unit, department of cardiology, Georges-Pompidou European hospital, 20, rue Leblanc, 75015 Paris, France

^b Department of paediatric cardiology, centre de référence des malformations cardiaques congénitales complexes, M3C, Necker, Paris, France

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KEYWORDS

Grown-up congenital heart disease;
Insurance;
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Summary

Background. — Improvements in the treatment of children with congenital heart disease have led to most of these patients reaching adulthood. Despite the increase in lifespan, very little is known about their quality of life — in particular, their ability to obtain a mortgage or consumer loan.

Aim. — To investigate the outcome of mortgage and loan applications made by adults with differential severities of congenital heart disease.

Methods. — Four hundred and seventy-six patients were invited to participate in a questionnaire-based interview by phone. Of these patients, one hundred and forty-two responded. Respondents were classified into three categories ('significant', 'complex' and 'mild') based on congenital heart disease severity according to the Bethesda conference.

Results. — Ninety patients (64%) had applied for loans; 17 (16.5%) did not report their heart disease to the insurance company, 13 were refused insurance and 39 were asked to pay surplus fees. The imposed fees concerned patients classified in the 'significant' and 'complex' groups ($P < 0.0001$ and $P < 0.003$, respectively, compared with those classified in the 'mild' group). Age, sex, other diseases, cardiovascular risk factors and duration of the loan had no influence on loan application outcomes.

Abbreviations: AERAS, *s'Assurer et Emprunter avec un Risque Aggravé de Santé*; CHD, congenital heart disease; INSEE, Institut national de la statistique et des études économiques (National Institute of Statistics and Economic Studies).

* Corresponding author. Fax: +33 1 56 09 26 64.

E-mail address: magalie.ladouceur@egp.aphp.fr (M. Ladouceur).

MOTS CLÉS

Cardiopathie
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Conclusion. — Adults with congenital heart disease are considerably more likely to have difficulty obtaining a mortgage or loan, independent of their congenital heart disease severity. Moreover, despite an increased obtainment of a loan in patients classified as 'mild', the refusal rates were identical for patients classified as having 'significant' or 'complex' congenital heart disease, although their prognosis is different.

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Résumé

Introduction. — Les progrès dans la prise en charge des enfants atteints d'une cardiopathie congénitale ont conduit la majorité de ces patients jusqu'à l'âge adulte. Malgré l'augmentation de leur espérance de vie, peu de données existent sur leur qualité de vie, en particulier sur leur accès à l'assurance d'un prêt.

But. — Étudier les résultats des demandes de prêt effectuées par des patients atteints de cardiopathie congénitale de gravité différente.

Méthode. — Quatre cent soixante-seize patients ont été contactés pour répondre à un questionnaire concernant leur demande de prêt. Parmi eux, 142 ont répondu. Ces patients ont été classés en trois catégories en fonction de la complexité de leur cardiopathie congénitale, selon la conférence de Bethesda (cardiopathie congénitale « minime », « significative » et « complexe »).

Résultats. — Parmi les patients interrogés, 90 (64 %) ont effectué une demande de prêt, 17 (16,5 %) n'ont pas déclaré leur cardiopathie à la compagnie d'assurance, 13 ont eu des refus d'assurance et 39 des tarifs majorés. Cela concernait surtout les groupes de patients avec des cardiopathies congénitales « significatives » et « complexes » ($p < 0,0001$ et $p < 0,003$, respectivement). L'âge, le sexe, la notion d'autres maladies, les facteurs de risque cardiovasculaires et la durée de l'emprunt n'avaient pas d'influence sur les résultats des demandes de prêt.

Conclusion. — Malgré une amélioration de l'accès à l'assurance pour les patients avec une cardiopathie congénitale simple, le taux de refus reste le même pour les patients avec une cardiopathie congénitale de complexité intermédiaire ou sévère bien que leur pronostic diffère.

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Introduction

Improvement in the diagnosis and management of children with congenital heart disease (CHD) has led to a rapid increase in the population of adults with heart defects. These numbers are now approaching one million in North America, with more adults (aged > 16 years) than children with CHD [1]. A similar increase has occurred in Western Europe [2]. While lifespan has increased markedly for these patients, little is known about their ability to obtain a mortgage or consumer loan. Mortgage application is often a necessity and a source of anxiety for most individuals; and this anxiety is often amplified in CHD patients. Questionnaire studies of provider companies and consensus statements suggest that most adults with CHD would be denied insurance or subject to higher rates [3–6]. A number of large-scale, long-term studies are available for evaluating outcomes in many cases of CHD. This has facilitated the approximation of mortality risks compared with a healthy control population, which in turn has been implemented as the basis of policy formulation by mortgage insurance companies. However, the risk rate is not identical for all insurance companies and the heart defect prognosis varies according to the lesion. The AERAS convention (*s'Assurer et Emprunter avec un Risque Aggravé de Santé*) [7] aims to expand access of loans to persons who have or have had a severe disease. This consensus was signed in January 2007 by governments, banking trade associations, public and private insurance companies and associations of consumers

and patients. Nevertheless, the loan application status of patients with CHD in France remains unknown.

To determine the consumer loan and mortgage status in adults with CHD within France, we investigated obtainment of a mortgage or consumer loan in a cohort of CHD patients. We were particularly interested to establish whether congenital heart lesions have a specific effect on mortgage and loan application outcomes.

Population and methods

From the database of our adult CHD unit, 476 patients with CHD were selected and contacted by phone. Patients aged less than 30 years at the time of contact were excluded. Indeed, more than two-thirds of loan applications are made by people aged more than 35 years, according to the French property market [8]. Patients with learning difficulties, lost to follow-up, who were living abroad, deceased or with learning difficulties were also excluded from further study. We made three separate attempts to reach patients by phone and request their participation in our study. One hundred and forty-two patients agreed to participate.

Patients were classified according to the Bethesda classification, which takes into account the severity and complexity of heart disease. The CHD population was divided into 'mild', 'significant' and 'complex' groups. Heart lesions were grouped as: 'mild' when they were simple heart diseases with good outcome (normal or near

Table 1 Socioprofessional categories according to the National Institute of Statistics and Economic Studies.

1	Farmers, operators: primary sector
2	Artisans, traders and entrepreneurs
3	Executives, intellectual professions
4	Intermediate occupations
5	Blue-collar employees
6	Workers
7	Retirees
8	Other people without work

normal prognosis) and only in need of observation; examples of these are mild aortic or mitral regurgitation, mild pulmonary stenosis and repaired atrial or ventricular septal defect. CHDs with moderate complexity and intermediate outcome, where correction has been attempted but likely requires further intervention, were classified as 'significant'; these included tetralogy of Fallot, repaired coarctation and repaired complete atrioventricular septal defect. CHDs with greater complexity and an uncertain or poor outcome, such as Eisenmenger's syndrome, cyanotic congenital heart, Fontan circulation, single ventricle or lesions with the right ventricle supplying the systemic circulation, were classified as 'complex'.

Patients were further classified according to their socio-professional category defined by INSEE (National Institute of Statistics and Economic Studies; Table 1). Complications related to their heart disease, cardiovascular risk factors and other co-morbidities (such as cancer) at the time of loan application, were collected. Finally, we asked whether the patient had sought advice on insurance company policies from a patient association.

Statistical analysis

All values were expressed as mean \pm standard deviation (SD). Statistical analyses were performed using Statview V.5.0.1 software (Adept scientific, Letchworth, UK). Differences in quantitative variables between patient groups were analysed by studying the variances. The Chi-square test was used to compare proportions.

Results

Among the 142 patients included in our study, 63.4% ($n=90$) had applied for loan insurance; 13 had submitted two loan applications, so in total there were 103 loan applications. Twenty-eight percent ($n=14$) did not apply for a loan because they felt that their condition, particularly in cases of 'significant' or 'complex' CHD (64% and 36%, respectively), would impede obtainment of the loan. Seventeen patients (16.5%) obtained insurance without disclosing their heart disease (Fig. 1); only 79 of the patients who applied for a loan disclosed their heart disease. In this group, the mean age was 40.8 ± 9.6 years (age range 30–70 years). Forty patients were female. Forty-seven percent ($n=37$) were executives or worked in intellectual professions (category 3), 24% ($n=19$) were in intermediate occupations (category

Table 2 Comparison of loan application outcomes in adults with 'mild', 'significant' and 'complex' congenital heart disease.

Classification	Number (%)		
	Standard rates	Exclusions and/or extra fees	Refusal
Mild ($n=8$)	7 (87.5)	1 (12.5)	0
Significant ($n=40$)	5 (12.5)	26 (65.0) ^a	9 (22.5) ^a
Complex ($n=28$)	6 (21.4)	18 (64.3) ^a	4 (14.3) ^a

^a Refusal and insurance at non-standard rates were more frequent in 'significant' and 'complex' congenital heart disease compared with 'mild' congenital heart disease ($P<0.0001$ and $P=0.003$, respectively).

4) and 15% ($n=12$) were blue-collar employees (category 5). Most of the patients with CHD were classified as having 'significant' CHD (54.4%, $n=43$) or 'complex' CHD (35.5%, $n=28$). Socioprofessional class distribution was significantly different depending on the severity of CHD: patients with 'mild' and 'significant' CHD were mainly classed in category 3 and those with 'complex' CHD were mainly classed in category 4.

Ninety percent (71/79) of loan applications were for mortgage loans; the remainder were consumer loans. The average loan was for 17 ± 5 years. For 83.5% of patients (66/79), the insurance application outcome was positive and 18 patients acquired insurance under standard rates. Forty-five (57%) loan applications were obtained either by exclusion of the heart defect information from the benefits policy or with increased rates (specifically, 32 were obtained at increased rates, six with exclusion and seven with both). The refusal rate was 16.5% (13/79). Refusal and insurance at non-standard rates were more frequent in 'significant' and 'complex' CHD groups ($P<0.0001$ and $P=0.003$, respectively; Table 2). For example, 75% of patients with tetralogy of Fallot ($n=9$) had insurance applications accepted with imposed increased rates or by exclusion of the CHD information from the policy; one patient with tetralogy of Fallot was refused insurance.

Sex and age had no influence on the loan application outcome. However, insurability was significantly dependent on the socioprofessional class. Rates of refusal or being asked to pay extra were significantly higher in categories 1, 4 and 5 ($P=0.01$). Twenty patients (25.3%) had cardiovascular risk factors and 16 patients (20.3%) had extracardiac diseases (thyroid disorders, $n=12$; asthma, $n=2$; breast cancer, $n=2$; hepatitis B virus infection, $n=1$; hepatitis C virus infection, $n=1$) at the time of application. Cardiovascular risk factors and co-morbidities did not influence patient insurability. Complications related to CHD did not change the loan refusal rate nor did it change increased rate demands or cases of exclusion of CHD information. The duration of the loan requested ($>$ or $<$ 10 years, $P=0.22$) had no impact on application request outcome.

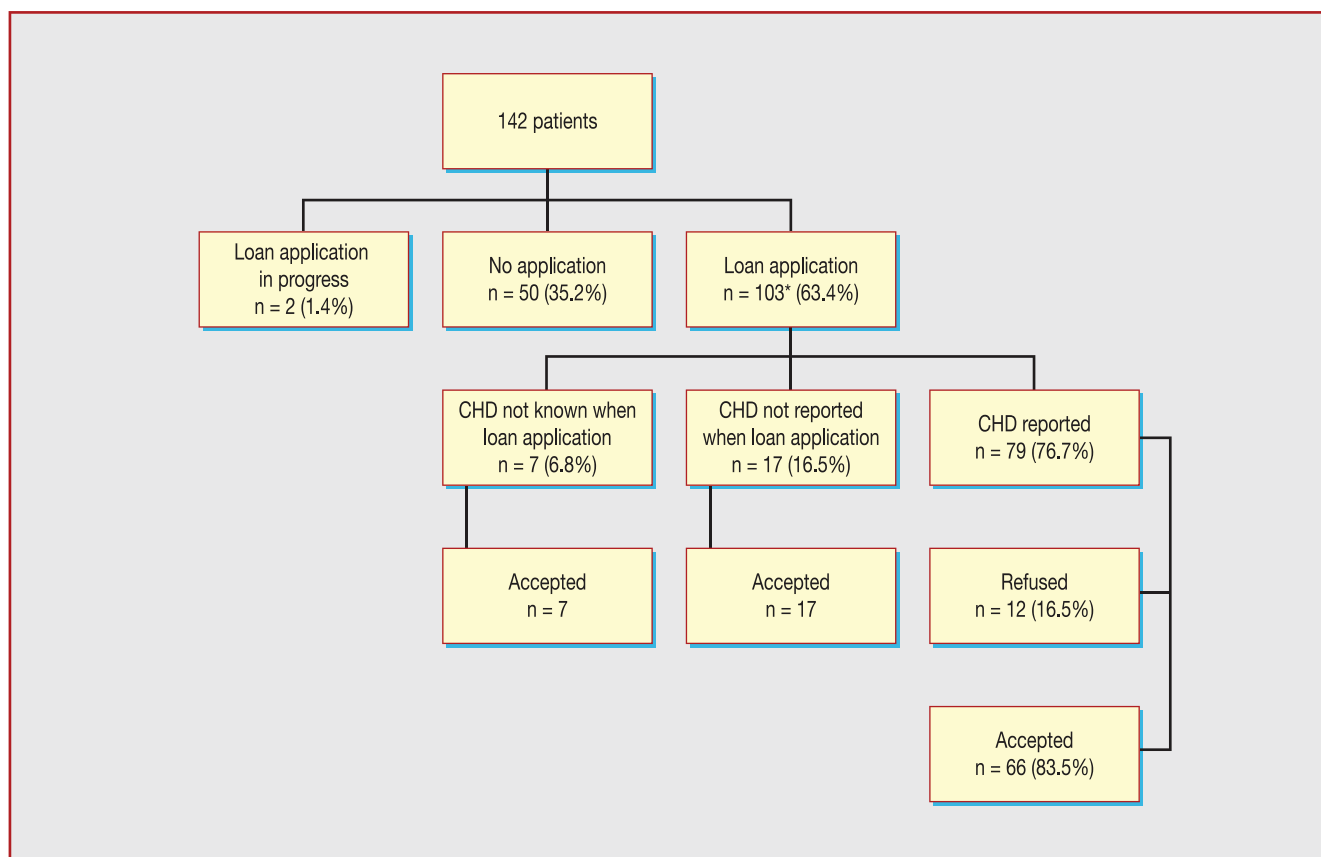


Figure 1. Distribution of status of loan applications. *Thirteen patients made two loan applications.

Declarations of CHD were primarily provided by questionnaire (Table 3). Decisions on loan applications were made by contacting the supervising cardiologist for eight patients with 'significant' CHD (20.0%) and four patients with 'complex' CHD (14.2%). Three patients (3.8%) contacted a CHD patient association for advice on insurance companies.

Discussion

Our findings indicate that patients with 'significant' CHD have the same increased rate of refusal of insurance at standard rates as those with 'complex' CHD. Moreover, patients with simple heart lesions are more likely to be insured at

standard rates. These findings indicate that insurance companies have a better knowledge of the group of patients with 'mild' CHD, which was not the case in the study by Crossland et al. in 2004 [5]. However insurability outcome is identical in patient groups demonstrating 'intermediate' or 'significant' heart defects, suggesting an absence of thorough knowledge among insurance companies.

Prognosis varies within individual lesions, particularly in 'significant' CHD. For example, patients with transposition of the great arteries who had arterial switch operations, without coronary complication and pulmonary artery stenosis, have a long-term prognosis that should not be different from normal. However, comprehensive data for these patients are lacking. In general, positive prognostic

Table 3 Comparison of types of medical evaluation required by insurers between the three classifications of congenital heart disease.

	Number (%)		
	Mild (n = 8)	Significant (n = 40)	Complex (n = 28)
Medical questionnaire	7 (87.5)	17 (42.5)	19 (67.9)
GP certificate	1 (12.5)	8 (20.0)	4 (14.2)
Cardiologist certificate	0	7 (17.5)	1 (3.7)
GUCH specialist certificate	0	8 (20.0)	4 (14.2)

GP: general practitioner; GUCH: grown-up congenital heart.

markers include the presence of biventricular circulation and a systemic left ventricle, repair at early age, good functional capacity and the absence of major or progressive haemodynamic lesions. Recent advances in the treatment of adult patients with 'significant' CHD have improved the prognosis for this group of patients, which tends to reach the prognosis for normal control populations [9]. Therefore, it is exceedingly important that physicians emphasize positive diagnostic factors, and the presence and absence of negative prognostic factors, in their letters for insurance purposes.

It is surprising that decisions by loan companies are often made without contacting the supervising cardiologist and that premiums are probably based on a diagnosis rather than on details of the haemodynamic status of an individual patient. This attitude will particularly penalize patients with 'significant' CHD. Insurance companies tend to categorize each diagnosis similarly, although there are some inconsistencies between companies. Therefore, patients declined insurance or offered insurance at high premiums by one company should seek another company. Another possibility is to seek advice from a CHD patient association; only 3% of the patients contacted had done so. Patient associations may be able to provide advice about insurance companies with a track record of providing coverage. Moreover, patients may receive a more favourable response from insurance companies when followed in a specialized adult clinic where management of CHD and its late complications are routine.

Interestingly, we found that age does not affect insurability. As mortality in the general population predictably increases with age, whereas mortality associated with CHD remains the same, mortality ratios for CHD patients inevitably decrease with age. CHD patients may therefore have a better chance of obtaining coverage after the age of 50 years compared with others. Cardiovascular risk factors seem to weigh less in the insurer's decision than heart disease in this population. Extracardiac diseases also do not affect insurability. This may be because, in our study, they were essentially thyroid disorders, which are less severe than heart disease.

In 2009, the Fédération française des sociétés d'assurance reported results of the AERAS convention [10]. This showed that a significant percentage of insurance applications are made by individuals with increased health risks (92.8%); of these, 49% had an additional premium for life coverage and 43–51% had an exclusion of their disease from the benefits policy in the case of disability claims. Only 1% of applications were denied. These results were controversial among patients and consumer associations, in particular where disability is not adequately covered. This is confirmed by the refusal rates of patients with 'significant' CHD in our study. Many patients (40%) were not aware of this convention [11] and some banks and insurers are reluctant to apply the convention.

There are several limitations to our study. First, many patients refused to answer the questionnaire by phone. Perhaps inclusion in our study would have been greater if it had been conducted in outpatient clinics. Comparison of insurability according to CHD severity would have been more relevant if standardization had been carried out according to age, loan amount requested and socioprofessional class, for each heart defect. Further, there was an inherent bias

in patient recruitment due to the database we used, which originates from a specialized centre that follows mainly 'complex' CHD cases. This explains the small number of respondents to our study who displayed simple heart lesions. It would be also interesting to compare the CHD population with a control population, to assess the insurability of these patients compared with a larger spectrum of controls.

Conclusion

There is still extensive disparity in the insurability issues facing adults with CHD, predominantly those exhibiting 'complex' lesions. Despite advances in medical interventions, including innovative surgical and catheter techniques and improved risk stratification, the overall prognosis, and therefore insurability, has not been improved for these adults. The improvements in insurability are dependent on the need for ongoing studies and information transfer from large-scale and long-term studies. Indeed the dissemination of this information, in conjunction with a co-ordinated effort between different centres to describe outcomes in high- and low-risk cohorts in this population of patients, will be indispensable for improving loan attainments in CHD patient populations.

Disclosure of interest

The authors have not supplied their declaration of conflict of interest.

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